

SECURITY INFORMATION

Engineering Know-how in USSR

1. Soviet engineering art is on par with that of the United States and in several instances in advance of American practice. The design and quality of workmanship of recent Soviet machine tools, tractors, and the Soviet passenger car, the "Pobeda" indicate that Soviet engineers can recognize good engineering design, are free to accept whatever is useful in foreign designs and have the ability to set out in new directions when engineering problems impose such a requirement.

2. Evidence of Soviet engineering know-how follows:

a. Soviet models of machine tools indicates full Soviet knowledge of modern design techniques of United States and Western Europe. For example, Soviet machine tools have surface hardening of machine guideways, operate at turning speeds up to 3,000 R.P.M., and use automatic electronic and hydraulic copying and contouring devices designed as an integral part of the model. The Russian machine tool industry is increasing its production of special single purpose type machine tools and "transfer machines" for quantity production of such items as automotive engines and agricultural machine parts.

b. The Soviet S-80 tractor, according to the Caterpillar Tractor Company, is one of the best foreign built tractors competing with Caterpillar's own product. The tractor reveals

a high order of engineering talent in the efficient use of materials, manpower, and production methods. Excellent workmanship is evident in parts where tolerances were critical, but on parts where finish or appearance contribute little to operation, Russian practice seems to be to conserve time and talent. Transmission gearing embodied the very latest developments. The Russian shifter fork is a die forging requiring no subsequent machining, a production technique not yet in use at the Caterpillar plant.

c. The Soviet passenger car "Pobeda" has permanently installed radiator shutters, controlled from the driver's seat for cold weather operation. The electrical system operates on 12 volts to facilitate cold weather starting.

d. Examples of Soviet inventiveness are two new metal cutting processes. These are:

(1) The electric-spark method which removes metal by "erosion" using an electrical spark discharge without actual contact of the work and cutting "tool".

(2) The anode-mechanical method which removes metal by an electrolytic process. In this process, however, contact is required between the work and the cutting "tool".

Six American firms are either developing new tools based on these Soviet ideas or are producing virtual copies of Soviet prototypes.

Soviet Railway Freight Originated

Soviet railroad freight originated increased steadily from 156 million metric tons in 1928 to 580 million in 1940. Postwar recovery was complete by 1948, and tons originated in 1951 had increased to 828 million. The estimate for 1957 (projected from Fifth Plan figures) is 1,400 million tons. This is approximately the amount of railway freight originated annually in the US during WWI and again in the mid-1920's.

During postwar recovery, annual production of shoes recovered the prewar level of about 200 million pairs in 1948 and advanced to 385 million pairs in 1951. The high Fifth Plan goals will probably be achieved, and by 1957 production will be about 550 to 650 million pairs. This will be about $2\frac{1}{2}$ pairs per person, or nearly as great as US per capita production.

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